Claims

Claims 1-17 were previously cancelled without prejudice or disclaimer of the subject matter therein. Claims 30-31 and 33 were previously withdrawn by the Applicant without prejudice or disclaimer of the subject matter therein. The full text of such withdrawn claims has been included in this claim set as a courtesy to the Examiner. Claims 32 and 34 have been cancelled without prejudice or disclaimer of the subject matter therein. Claims 18-29 are currently pending. Claim 18 has been amended without prejudice or disclaimer of the subject matter thereof.

In the Claims:

1-17. (Cancelled).

18. (Currently Amended) A ~~method of utilizing a~~ competitive binding assay for detecting aneuploidy in ~~one or more chromosomes of~~ a subject ~~simultaneously~~, said method comprising:

(i) producing fluorescently-labeled polynucleotide samples that are representative of the number of each chromosome in said subject;

(ii) ~~further~~ producing equivalent, non-aneuploid fluorescently-labeled polynucleotide standards for each chromosome, wherein the sample and the standard have distinct emission spectra;

(iii) mixing said fluorescently-labeled polynucleotide ~~non-equal amounts of~~ sample and said non-aneuploid fluorescently-labeled polynucleotide standard with a limiting amount of binding agents for each chromosome, wherein said binding agents comprise a polynucleotide that is complementary to said sample and said standard for each chromosome immobilized onto microparticles, and said microparticles for each chromosome are distinct in size and fluorescent label intensity;

(iv) wherein the fluorescent label on said microparticles, ~~if present~~, has a distinct

emission spectrum from both said sample and said standard;

(v) wherein the presence of an aneuploidy creates a detectable signal due to non-equal binding of said sample and said standard to said binding agent, and

(vi) detecting aneuploidy by comparing the signal caused by the binding of said sample and said sample to said binding agent , said aneuploidy being determined by unequal binding.

19. (Currently Amended) The ~~method~~ assay according to Claim 18, wherein said subject is a diploid organism.

20. (Currently Amended) The ~~method~~ assay of Claim 19, wherein said diploid organism is selected from the group consisting of a mammal and a plant.

21. (Currently Amended) The ~~method~~ assay of Claim 20, wherein said mammal is selected from the group consisting of a human, a livestock animal and an embryo.

22. (Currently Amended) The ~~method~~ assay of Claim 21, wherein said livestock animal is selected from the group consisting of cattle, sheep and horses.

23. (Currently Amended) The ~~method~~ assay of Claim 21, wherein said embryo is generated using *in vitro* fertilization.

24. (Currently Amended) The ~~method~~ assay of Claim 23, wherein said aneuploidy is detected in said embryo prior to implantation of said embryo.

25. (Currently Amended) The ~~method~~ assay according to Claim 24, wherein said sample originates from a blastomere.

26. (Currently Amended) The ~~method~~ assay according to Claim 18, wherein said sample and

said standard are produced from genomic DNA from a source selected from the group consisting of a somatic cell, a reproductive cell and a gamete.

27. (Currently Amended) The ~~method~~ assay of Claim 18, wherein said binding agent comprises a nucleic acid immobilized on a microparticle, said nucleic acid having binding specificity for said sample and said standard.

28. (Currently Amended) The ~~method~~ assay according to Claim 27, wherein said microparticles are silica microparticles.

29. (Currently Amended) The ~~method~~ assay of Claim 28, wherein said silica microparticles are silanized.

30. (Previously Withdrawn) A kit for the diagnosis of aneuploidy in one or more chromosomes in a subject comprising:

(i) a first set of fluorescently labeled oligonucleotide primers suitable for the amplification of chromosome specific polynucleotide sequences;

(ii) a second set of fluorescently labeled oligonucleotide primers with identical sequences to the first set, but comprising a different fluorescent marker with a distinct emission spectrum to said first set;

(iii) a number of binding agents, distinct on the basis of a characteristic selected from the group consisting of microparticle size, reporter molecule, and reporter molecule intensity, wherein said binding agents are equal to the number of chromosomes in said subject, and wherein said binding agents comprise a polynucleotide sequence complementary to the predicted amplicon of the oligonucleotide primers which is immobilized to a labeled or unlabelled microparticle;

(iv) wherein the label of said microparticles, if present has a distinct emission spectrum to the label of both said first and said second set of oligonucleotide primers; and

(v) instructions for use of said kit.

31. (Previously Withdrawn) The kit of claim 30, wherein said subject is a diploid organism

32. (Cancelled)

33. (Previously Withdrawn) The kit of claim 32, wherein said mammal is selected from the group consisting of a human, a livestock animal and an embryo.

34. (Cancelled)